

US EPA ARCHIVE DOCUMENT

**U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION V
POLLUTION/SITUATION REPORT #168**



**KALAMAZOO RIVER/ENBRIDGE SPILL – REMOVAL
SITE # Z5JS
MARSHALL, MICHIGAN
LATITUDE: 42.2395273; LONGITUDE: -84.9662018**



Removal of Sediment Curtain from the E4.0 Containment System Boom E

To: Susan Hedman, U.S. EPA Regional Administrator
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From: Ralph Dollhopf, U.S. EPA, Federal On-Scene Coordinator

Date: 12/6/2012

Reporting/Operational Period: 0700 hours 11/5/2012 through 0700 hours 11/27/2012

1. Site Data

Site Number:	Z5JS	Response Type:	Emergency
Response Authority:	OPA	Incident Category:	Removal Action
Response Lead:	PRP	NPL Status:	Non-NPL
Mobilization Date:	7/26/2010	Start Date:	7/26/2010
FPN#:	E10527		

2. Operations Section

- The organizational response structure consisted of the following Branches: 1) Submerged Oil; 2) Containment; 3) Kalamazoo River System; and 4) Waste Management.

2.1 Submerged Oil Branch

2.1.1 Submerged Oil Science Group

- On October 12, 2012, U.S. EPA issued an Approval with Modifications letter for Enbridge's 2012 Morrow Lake and Morrow Lake Delta Monitoring and Management Work Plan. Enbridge's re-submittal dated November 20, 2012 is currently under review by U.S. EPA to ensure the required modifications were adequately incorporated.
- Collection of monthly sediment samples from all installed Walling tubes was completed on November 8, 2012. Samples will be held for analysis, pending completion of the procedures for identification of Line 6B oil via chemical fingerprinting. Analytical results will be used for additional calibration of the hydrodynamic model and to further characterize submerged oil fate and transport. All Walling tubes and associated anchor systems were subsequently removed for the winter.
- Teams installed and surveyed monuments for conducting bathymetry utilizing a total station system at all sediment trap locations. Quarterly sediment trap bathymetry monitoring began on November 27, 2012.

- Teams installed and surveyed monuments for bathymetry utilizing a total station system around the E4.0 Containment System. Upstream and downstream sediment curtain bathymetry was conducted prior to and after removal of the E4.0 System. Post-curtain removal bathymetry was completed on November 20, 2012.

2.1.2 Submerged Oil Compliance Group

- No activities were conducted during this operational period.

2.2 Containment Branch

2.2.1 Containment Compliance Group

- No activities were conducted during this operational period.

2.2.2 Containment Recovery Group

- Enbridge initiated removal of the E4.0 Containment System pursuant to the approved Fall 2012 E4.0 Containment Removal Plan dated November 16, 2012. Removal of the sediment curtain was completed on November 19, 2012 and removal of the surface hard boom was completed on November 21, 2012. Turbidity monitoring and sheen management was conducted throughout the E4.0 Containment System removal activities. No turbidity triggers were observed during system removal. Enbridge began removal of the anchor posts on November 26, 2012.
- Pursuant to the Emerging Oil Management Program (EOMP), Enbridge, U.S. EPA, and MDEQ continued to track the location, response, and sheen differentiation test results (when necessary) of each identified location of sheen and/or oil globules in the main channel and overbank areas. Observations of sheen and/or oil globules were reported back to Operations Section Chiefs for response, if appropriate. See Table 1 for information regarding the total number of sheen differentiation tests conducted, and the results of those tests.
- Management of oil sheen and/or globules continued with sweep boats conducting sweep responses as determined necessary. Enbridge continued routine sweep boat recovery activities at Ceresco Dam (MP 5.25 to Ceresco Control Point), MP 21.5 to MP 28.25, and the Morrow Lake Delta/Morrow Lake. See Table 2 for information regarding the total number of responses to oil sheen and/or globules by date.
- As of November 26, 2012, a total of 800 feet of surface hard boom is deployed at the Ceresco Control Point. Teams removed debris accumulated within the boomed area.
- Teams performed weekly visual inspections of the 5 currently-installed Phase I and II enhanced sediment trap structure locations.

2.3 Kalamazoo River System Branch

2.3.1 Talmadge Creek/Kalamazoo River Remedial Investigation Group

- Enbridge continued Kalamazoo River remedial investigation activities from November 5 - 16, 2012, including hydrocarbon fingerprint evaluation of overbank soils and collection of soil samples for background metals analyses.

2.3.2 Kalamazoo River Compliance Group

- No activities were conducted during this operational period.

2.3.3 Kalamazoo River Remedial Action Group

- No activities were conducted during this operational period.

2.3.4 Talmadge Creek/Kalamazoo River Monitoring Group

- Turbidity monitoring was conducted during E4.0 System boom removal.
- Monitoring of erosion control devices continued.
- Water level and flow rate information continued to be downloaded daily from three USGS gauging stations at Marshall, Battle Creek, and Comstock.
- Collection of daily water and sediment temperature readings continued at locations where operational tasks were being performed.
- Enbridge conducted monthly surface water monitoring at 18 locations along the Kalamazoo River and Morrow Lake.
- Enbridge conducted weekly monitoring of signage along the Kalamazoo River. Removal of buoys was completed on November 8, 2012.

2.5 Waste Management Branch

- Oily water and debris from the E4.0 Containment System removal were transported to Frac Tank City for disposal.
- No equipment or boom was decontaminated during this reporting period.
- Quantities of soil, debris, and liquid shipped off-site during the reporting period are presented in Tables 3 and 4.
- The total amount of recovered oil from the inception of the response has been estimated using actual waste stream volumes, analytical data, and physical parameters of oil-containing media. A summary of the estimated volume of recovered oil is presented in Table 5.

3. Planning

3.1 Situation Unit

- Situation Unit personnel observed and documented progress in operational areas, and documented locations of oil sheen and/or globules through field observations and weekly overflights. Personnel reported observations of oil sheen and/or globules to Operations for follow-up testing and/or response, consistent with the EOMP. See Section 2.2.2 for additional details regarding the EOMP.
- Specific observations during this period include the repeated observation of oil sheen and globules at the Ceresco Dam impoundment from MP 4.5 to the Ceresco Control Point, the Mill Ponds, the north and south coves and the main channel of the Morrow Lake fan, and the Morrow Lake Delta. However, observations of oil sheen and globules decreased during the operational period consistent with decreasing water and sediment temperatures. There were 7 sheen responses conducted during the reporting period.
- Situation Unit personnel continued documenting occurrences of ice formation throughout the river system.

- Photographs were taken and distributed to project participants during the weekly Consolidated ICS Meeting and Multi-Agency Coordination (MAC) Group meetings.

3.2 Environmental Unit

- Enbridge, U.S. EPA, and MDEQ will continue to discuss further use of the Kalamazoo River Hydrodynamic Transport Model to support future Operational decisions.
- Enbridge and MDEQ continued to review and track RI progress.

3.3 Documentation Unit

- The Documentation Unit continued organizing and archiving electronic and paper files for post-incident use.

3.4 Resource Unit

- The Resources Unit continued to support production of the Incident Action Plan (IAP), supported the planning efforts of operations, and provided information to Logistics personnel in order to properly prepare and procure resources.

4. Command

4.1 Safety Officers

- Safety personnel continued conducting work-site safety inspections and implementing the plan for integration of public safety and worker safety on the Kalamazoo River.

4.2 Public Information

- The number of public inquiries reported by Enbridge for this period is presented in Table 7.

5. Finance

- The current National Pollution Funds Center (NPFC) ceiling is \$56.25 Million. Approximately 86.9% of the ceiling has been spent through November 25, 2012. The latest average 7-day burn rate was \$12,970 per day, reflecting the reduced staffing over the Thanksgiving holiday break. These cost summaries reflect only U.S. EPA-funded expenditures for the incident. A summary of these expenses is presented in Table 8.

6. Scientific Support Coordination Group (SSCG)

- On October 24, 2012, U.S. EPA received the Centre for Offshore Oil, Gas and Energy Research (COOGER) report entitled “UV-Epifluorescence Microscopy Analysis of Sediments Recovered from the Kalamazoo River”. Enbridge provided comments regarding the report to U.S. EPA on November 13, 2012. The report and Enbridge’s comments are currently being reviewed by U.S. EPA.
- On October 26, 2012, U.S. EPA Environmental Response Team (ERT) submitted the Final Bench Scale/Screening Level Oil Biodegradation Study for the Enbridge Line 6B Release. Enbridge provided

comments regarding the report to U.S. EPA on November 8, 2012. The report and Enbridge's comments are currently being reviewed by U.S. EPA.

- SSCG and Enbridge forensic chemists continued regular conference calls to examine the oil fingerprinting results and compare procedures for applying oil fingerprinting results to measuring Line 6B oil remaining in the Kalamazoo River sediments.

7. Participating Entities

- Entities participating in the MAC include:
 - U.S. Environmental Protection Agency
 - Michigan Department of Environmental Quality
 - Michigan Department of Community Health
 - City of Battle Creek
 - City of Marshall
 - Allegan County Emergency Management
 - Calhoun County Public Health Department
 - Calhoun County Emergency Management
 - Kalamazoo County Health and Community Services Department
 - Kalamazoo County Sheriff
 - Enbridge (Responsible Party)
- For a list of cooperating and assisting agencies, see SITREP #51 (Sections 3.2 and 3.3).

8. Personnel On-Site

- Staffing numbers for the entities and agencies active in the response are presented in Table 9.

9. Source of Additional Information

- For additional information, refer to <http://www.epa.gov/enbridgespill>. For sampling analysis data, see <http://response.enbridge.com/response/>.

10. Clean-up Progress Metrics

Table 1 – Sheen Differentiation Test Results

Description	Total	November 2012																					
		26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5
Sheen Tests Performed	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Results Indicated Petroleum Source	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Results Indicated Biogenic Source	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Inconclusive Test Results	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 2 – Sheen Responses

Total	November 2012																					
	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5
7	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	3	1	0	0

Table 3 - Soil and Debris Shipped Off Site (as of 11/26/2012)

Waste Stream	Cumulative	Disposal Facility
Haz Soil (yd ³)	19,644	Envirosafe (Oregon, OH)
Non-Haz Soil (yd ³) (Excluding Ceresco Dredge)	78,109	SET/C&C
Non-Haz Soil & Debris (yd ³) (Excluding Ceresco Dredge)	64,815	Westside Recycling (Three Rivers, MI)
Non-Haz Soil (yd ³) (Ceresco Dredge Only)	5,562	EQ/Republic (Marshall, MI)
Haz Debris (yd ³)	12,075	EQ/Michigan Disposal (Wayne, MI) and Republic (Marshall, MI)
Non-Haz Household Debris (ton)	1,801	SET/C&C
Non-Haz Impacted Debris (ton)	7,147	

Shaded items are discontinued waste streams.

Table 4 - Liquid Shipped Off-Site (as of 11/26/2012)

Stream	Destination Company	Destination Location	Cumulative Volume (gallons)†
Non-Haz Water	Battle Creek POTW	Battle Creek, MI	1,143,280
Non-Haz Water	Dynecol	Detroit, MI	981,792
Non-Haz Water	Liquid Industrial Waste	Holland, MI	1,376,757
Non-Haz Water	Plummer	Kentwood, MI	476,726
<i>Hazardous Water</i>	<i>Dynecol</i>	<i>Detroit, MI</i>	<i>3,594,579</i>
<i>Oil</i>	<i>Enbridge Facility</i>	<i>Griffith, IN</i>	<i>766,288</i>
<i>Other Material</i>			<i>1,405,525</i>
<i>Treated Non-Haz Water</i>	<i>Liquid Industrial Waste</i>	<i>Holland, MI</i>	<i>370,200</i>
<i>Treated Non-Haz Water</i>	<i>Plummer</i>	<i>Kentwood, MI</i>	<i>4,976,140</i>
<i>Hazardous Water</i>	<i>Safety Kleen^a</i>		<i>825</i>
<i>Treated Non-Haz Water</i>	<i>Dynecol</i>	<i>Detroit, MI</i>	<i>150,700</i>
<i>Treated Non-Haz Water</i>	<i>Battle Creek POTW</i>	<i>Battle Creek, MI</i>	<i>1,968,700</i>
Total			17,211,512

Shaded and italicized items are discontinued waste streams.

† Cumulative quantities may not reconcile with previous reports (due to auditing).

a New Age lab water and methanol mix generated by mobile laboratory.

Table 5 – Estimated Recovered Oil (as of 11/26/2012)

Waste Stream Containing Recovered Oil	Destination Company	Destination Location	Estimated Oil Volume in Waste Stream (gallons)
Soil Impacted Soil & Debris	C&C Landfill	Marshall, MI	14,032
	Envirosafe/ Westside RDF	Oregon, OH	278,665
<i>Geotube Sediment - (Impacted Sediment)</i>	<i>Envirosafe/ Westside RDF</i>	<i>Oregon, OH</i>	<i>1,298</i>
Debris - (Roll Off Boxes with Impacted Sorbents, boom, pads, plastic, PPE, vegetation, and biomass)	EQ Michigan	Belleville, MI	34,471*
<i>Frac Tank City - Influent to Carbon Filtration System</i>	<i>C&C Landfill</i>	<i>Marshall, MI</i>	<i>8,109</i>
Frac Tank City - Water	Dynecol	Detroit, MI	46,176
	Liquid Industrial Waste Services, Inc.	Kentwood, MI	
	Plummers Env. Inc.	Holland, MI	
	BC POTW	Battle Creek, MI	
<i>Ceresco Pretreatment System</i>	<i>C&C Landfill</i>	<i>Marshall, MI</i>	<i>90</i>
<i>A-1 Pretreatment System</i>	<i>C&C Landfill</i>	<i>Marshall, MI</i>	<i>9</i>
Oily Water - RPP	Enbridge Facility	Griffith, IN	766,288
Total			1,149,137

Shaded and italicized items represent discontinued waste streams.

*Not all analytical is available at the time of report generation.

Table 6 – Samples Collected By Enbridge

Sample Type	Total	November 2012																					
		26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5
Surface Water	19	0	0	0	0	0	0	0	0	0	0	0	0	3	15	0	0	0	0	1	0	0	0
Private Well	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Groundwater	5	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	3	0	0	0
Sediment	69	0	0	0	0	0	0	0	14	0	0	0	1	1	0	0	0	0	0	14	33	6	0
Soil	77	0	0	0	0	0	0	0	0	0	0	0	9	7	8	11	0	0	8	7	8	9	10
Product	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dewatering	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sheen	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 7 – Public Inquiries Received by U.S. EPA and Enbridge

Location	Total	November 2012																					
		26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5
Marshall Community Center	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oil Spill Public Information Hotline	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
Website	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
Total Public Inquiries	4	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	0	0	0	0

Table 8 - Financial Summary (as of 11/26/2012)

Item	Expended (Cumulative)
<i>ERRS Contractors</i>	
<i>EQM (EPS50802) T057</i>	\$ 1,199,522
<i>T060</i>	\$ 213,636
<i>LATA (EPS50804) T019</i>	\$ 1,161,082
<i>ER LLC (EPS50905) T040</i>	\$ 683,330
<i>Total ERRS Contractors</i>	\$ 3,257,571
<i>Other Contractors</i>	
<i>Lockheed Martin (EPW09031) – TAGA Support</i>	\$ 198,379
<i>Lockheed Martin (EPW09031) -Biodegradability Study</i>	30,612
<i>T&T Bisso (EPA:HS800008)</i>	\$ 882,087
<i>Total Other Contractors</i>	\$ 1,111,078
START Contractor – WESTON (EPS50604)	
T030-Response	\$ 28,665,346
T032-Sampling	\$ 183,567
T037-Doc Support	\$ 1,821,036
Total START Contractor	\$ 30,669,949
Response Contractor Sub-Totals	\$ 35,038,598
U.S. EPA Funded Costs: Total U.S. EPA Costs	\$ 6,212,193
Pollution Removal Funding Agreements	
Total Other Agencies	\$ 2,051,535
Indirect Cost (16.00%)	\$ 3,598,252
Indirect Cost (8.36%)-payments after 10/1/2011	\$ 1,310,859
Indirect Cost (10.15%)-payments after 10/1/2012	\$ 317,247
Cost Documentation/Billing Admin Fee (2.93%)*	\$ 325,380
Total Est. Oil Spill Cost	\$ 48,854,064
Oil Spill Ceiling Authorized by USCG	\$ 56,250,000
Oil Spill Ceiling Available Balance	\$ 7,395,936

Shaded and *italicized* items are discontinued

* Effective on EPA Enbridge costs billed to USCG for bills issued after 6/5/12.

Table 9 - Personnel On-Site

Agency/Entity	November 2012																					
	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5
U.S. EPA	1	0	0	0	0	0	1	1	0	0	3	3	3	3	2	0	0	2	2	2	3	3
START	2	1	1	1	0	0	14	14	6	8	12	13	15	15	14	2	3	14	14	13	13	14
MDEQ	4	0	0	0	0	4	4	5	0	0	5	5	6	5	2	0	0	4	4	4	0	3
MDEQ Contractors	3	0	0	0	0	3	2	2	0	0	2	3	3	3	3	0	0	2	3	3	2	2
USGS	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	2	1	1	1	0
Calhoun County Public Health	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Calhoun County (CC) EM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
City of Battle Creek	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
City of Marshall	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kalamazoo County Public Health	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Kalamazoo Sheriff	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MDCH	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Michigan State Police EMD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Allegan County Emergency Mgmt.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MDNR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Enbridge – Kalamazoo River	0	0	0	0	0	0	0	1	1	1	0	4	10	10	4	0	0	5	6	6	6	6
Enbridge – Containment	12	0	4	0	0	20	20	19	8	16	5	5	8	9	11	0	4	9	9	11	9	9
Enbridge – Submerged Oil	0	0	0	0	0	0	9	10	15	10	13	14	17	16	15	0	0	10	10	8	10	11
Enbridge – Waste Management	1	0	0	0	0	1	3	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1
Enbridge – Marshall Office	14	1	3	1	0	14	36	36	13	10	36	37	38	34	35	2	5	38	42	41	38	37
Total	37	2	8	2	0	42	89	89	44	46	77	90	102	97	87	4	12	87	92	90	83	86

*Enbridge Operations and Field include Enbridge and contractors as reported by Enbridge